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AIR FORCE FLIGHT STANDARDS AGENCY
1535 COMMAND DRIVE, SUITE D-306
ANDREWS AFB, MD 20762-7002

AT-E-03

AIR TRAFFIC CONTROL TRAINING SERIES

EQUIPMENT

SSILS
REMOTE STATUS INDICATOR
CONTROL AND INTERLOCK

1 September 2002

FOREWORD

PURPOSE: This publication is used to train USAF air traffic controllers and is not intended to replace, substitute, or supersede official regulations, procedures, or directives.

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CORRECTIONS TO "AT" TRAINING SERIES

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INTRODUCTION

This publication is designed to be used in conjunction with hands on training and classroom instruction to familiarize air traffic controllers with the operation of solid state instrument landing system equipment.

The purpose of this training series is to familiarize controllers with the operation and use of the remote monitor control panel and interlock systems for the SSILS.

This training series is divided into three sections:

Section I. Description and General Characteristics of the SSILS Control Indicator, C-10307/G, GRN-29 (V).

Section II. Description and Characteristics of Interlock Control, C-10306/G.

Section III. C-10367/G, GRN-29(V) Operating Checklist.

SECTION I

Description and General Characteristics of the 88ILS Control Indicator. C-10307, GRN-29 (V)

The Solid State Instrument Landing System (SSILS) and its associated monitoring equipment is part of the USAF air traffic control system. The GRN-29 remote control/display unit (RC/DU) (Fig 1-1) is used by air traffic control personnel to monitor and determine the operating status of the AN/GRN-29 (V) SSILS. The RC/DU provides the status of the primary functional groups of the localizer, glideslope and up to three marker beacon stations. It also provides voice communication and localizer identification with the various components of the SSILS via a telephone handset. To initiate a call, lift the handset from its cradle and press the intercom assembly switch corresponding to the equipment site to be called. To reset the intercom, put the handset back in the cradle. An incoming call is signaled by a tone over the speaker. To receive a call, lift the handset, press the push-to-talk switch to transmit; release the switch to receive.

The transmitter status is automatically displayed by the lamp of the corresponding decoder/control assembly. Pressing the station cycle (STA CYCLE) switch causes the on-site control circuitry to advance one step in the following sequence: mains off, standbys off, main. The alarm may be silenced by pressing the alarm silence switch.

1. Operations of Control Indicator

Controls/Indicator	Function
Handset push-to-talk switch	Enables amplifier for intercom talk function. (1, Fig 1-1)
Power lamp	Power on lamp. (2, Fig 1-1)
Speaker	Aural alarm Speaker. (3, Fig 1-1)
Power (ON/OFF)	Power supply on/off switch. (4, Fig 1-1)
Handset on hook switch	Rearms call detecting circuits upon completion of call. (5, Fig 1-1)
Bulb test switch	Spring-loaded toggle switch, when pressed, lights all lamps. (6, Fig 1-1)

2. Decoder/Control Assembly

Controls/Indicator	Function
EXEC BYP lamp	Amber; lights to indicate equipment site action has bypassed remote control function. (7, Fig 1-1)
ABNL lamp	Amber; lights to indicate abnormal status, flashes to indicate loss of monitor tone output (monitor bypassed). (8, Fig 1-1)

OFF lamp	Red; lights to indicate equipment site transmitter is shut off. (9, Fig 1-1)
STBY lamp	Amber; lights to indicate standby transmitter group in operation. (10, Fig 1-1)
Main lamp	Green; lights to indicate main transmitter group in operation. (11, Fig 1-1)

3. Audio Generator Assembly

Controls/Indicator	Function
Alarm volume control	Screwdriver adjustment controls volume of incoming status alarm and intercom ring signals. (12, Fig 1-1)
Dimmer control	Controls brightness of decoder/control assembly MAIN lamp. (13, Fig 1-1)
Alarm SILENCE switch	Silences alarm indication from loudspeaker. (14, Fig 1-1)

4. Intercom Assembly

Controls/Indicator	Function
Phone Vol Control	Adjusts telephone handset volume level. (15, Fig 1-l)
Loc Switch	Localizes site intercom call switch. (16, Fig 1-1)
GS Switch	Glideslope site intercom call switch. (17, Fig 1-1)
Inner MKR Switch	Inner marker site intercom call switch. (18, Fig 1-1)
Middle MKR Switch	Middle marker site intercom call switch. (19, Fig 1-l)
Outer MKR Switch	Outer marker site intercom call switch. (20, Fig 1-1)

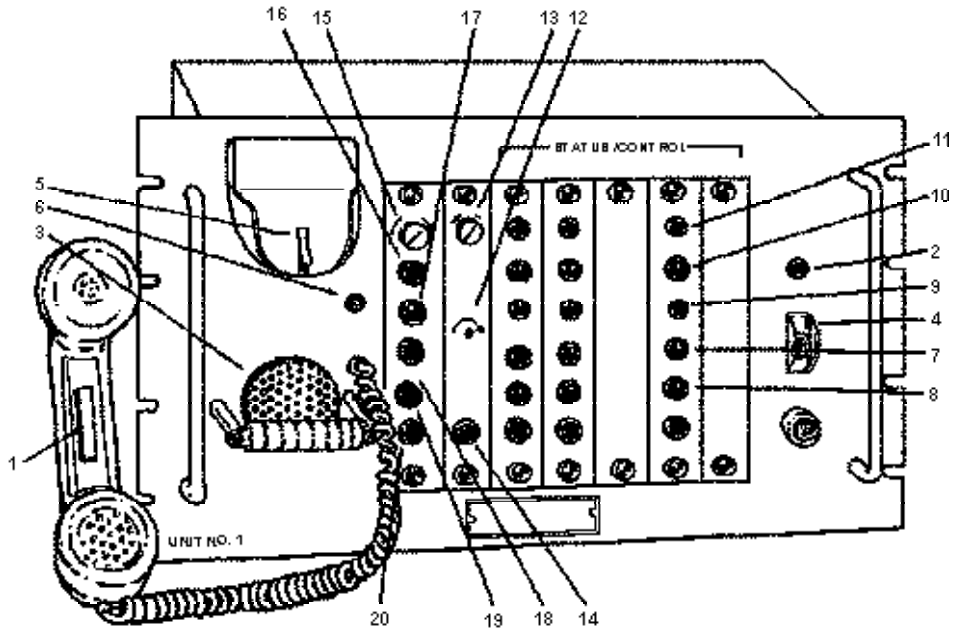

FIG 1-1

SECTION II

Description and Characteristics of Interlock Control, C-10306/G

Interlock Control C-10306/G (ICU) is required at each facility having an AN/GRN-29 ILS facing an AN/GRN-29 ILS on the same runway. Installed in the primary monitor facility and collocated with the RC/DU, the ICU permits air traffic control personnel to select one, and only one, of the two facing ILS equipments for effective radiation at a given time.

Operations of the Interlock Control Unit

Controls	Function
System A lamp	Green; 1ights to indicate system A ILS is selected. (1, Fig 2-1)
System B lamp	Green; lights to indicate system B ILS is selected. (2, Fig 2-1)
System Select (A/B) Switch	Toggle switch; select either A or B ILS for operation. (3, Fig 2- 1)

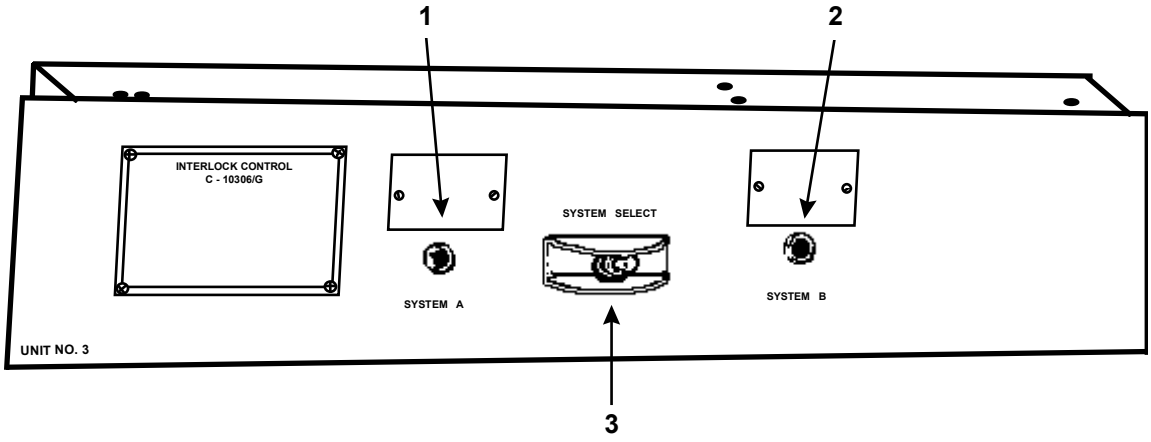

FIG 2-1

SECTION III

C-10307/G, GRN-29 (V) Operating Overview

Indication	Facility Status	Controller Actions
"MAIN" ON illuminated (Green)	System operating normal, usable facility.	None.
"STBY" ON illuminated (Amber)	Standby transmitter group in operations, usable Facility.	Notify job/maintenance control.
"ABNL" ON illuminated (Amber)	Maintenance required, usable facility.	Notify job/maintenance control.
"EXEC BYP" ON illuminated (Amber)	Maintenance has taken action to bypass remote control function, usable facility	Notify job/maintenance control. Controller does not have cycle capability.
"OFF" (Red)	Facility has shut down and is unusable.	Notify job/maintenance control immediately and cycle the standby transmitter. If standby does not cycle, take NOTAM action.
Flashing ABNL lamp (Amber)	Facility unusable, maintenance in progress.	Contact the facility. If no answer, take NOTAM action. Communications must be established and prior coordination must have been effected with maintenance to locally monitor at the site, if NOTAM action is not taken. Depress the silent button to stop the buzzer.
Aural Alarm	Abnormal site status or incoming intercom call.	Silence alarm, notify job/maintenance control or receive incoming call.

ILS RESET PROCEDURE CHECKLIST (GRN-29)

1. When the main transmitter fails the Localizer or Glideslope will automatically transfer from main to standby with no reset action required. Simply silence the alarm and wait for the standby transmitter to come on. NOTE: The marker beacons only have 1 transmitter. They will go from main to off. The station cycle sequence is main, off, main.

2. If both main and standby transmitters have failed, silence the alarm, wait 20 seconds and depress and hold the station cycle switch for approximately 2 seconds. The main transmitter light should come on.

3. If the main transmitter has failed and the system has transferred to the standby transmitter, silence the alarm. If you wish to cycle back to the main transmitter, wait 20 seconds and depress and hold the station cycle switch for 2 seconds. The red "off" light should be lit. Wait another 20 seconds and depress and hold the station cycle switch for 2 seconds. The main transmitter light should come on.

3. If the transmitters have failed and you are unable to cycle either the main or standby transmitter on, notify job/maintenance control and take NOTAM action.

4. If the transmitters are operating normally, but you wish to change from the primary to the standby transmitter, depress and hold the station cycle switch for 2 seconds. The "off" light should be on. Wait 20 seconds and depress and hold the station cycle switch for 2 seconds which should bring up the standby transmitter. After verifying that the standby transmitter operates properly, you can cycle back to the main with the following sequence: depress and hold the station cycle for 2 seconds, wait 20 seconds, depress and hold the station cycle again for 2 seconds and main transmitter light should come on.

INTERLOCK OPERATION

1. To change runways, simply move the interlock control unit select switch from the current ILS to the desired ILS system.

2. Verify that the main on lights are lit for the Localizer and Glideslope for the runway you have selected. Verify that the off lights are lit for the system that is now not selected.

3. Dual operation (both ILS systems on at the same time) is authorized by AFI 13-203 under certain conditions:
   a. Both ILS systems must be assigned discrete non-interfering frequencies.
   b. Weather must be VFR.
   c. Simultaneous operation is authorized for installation, maintenance restoration, preventative maintenance, and flight inspection.
   d. If there is interference documented by FAA flight inspection, a NOTAM must be sent restricting the facility to the in-tolerance portion of the ILS signal.

4. Your METNAV technicians may have installed a single/dual switch which is authorized by an Air Force Communications Electronics Maintenance Instruction. If installed, and the conditions specified in AFI 13-203 have been met, simply place the single/dual switch in the dual position. After maintenance or flight inspection has been completed, the single/dual switch must be placed in the single position.